DEC STD 140-6 Production Release Requirements for Printed-Wiring Boards, Modules, and Backplanes

DOCUMENT IDENTIFIER: A-DS-EL00140-06-0000 Rev B1, 13-Mar-1990

ABSTRACT: This standard describes the printed-wiring board (50-class), module (54-class), backplane (70-class), and parallel (50/54-class) release processes for printed wiring boards, modules, and backplanes to meet manufacturing production release requirements. Documentation requirements and acceptance criteria are also listed.

APPLICABILITY: Mandatory for all 50-class boards, 54-class modules, and 70-class backplanes released by Digital. DEC STD 140-0 provides an introduction and general requirements for this standard.

STATUS: APPROVED 13-Mar-1989; use VTX SMC for current status.

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Responsible Person:	Bob DuBois
SMC Writer:	Eleanor Jacobi

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Bob Dubois - Standard Owner

Eric Williams - Standards Process Manager

Direct requests for further information to:

Bob Dubois or John Graham
Use $ VTX ELF for the latest location information

Use VTX SMC to order copies of this document from Standards and Methods Control. Send distribution questions to JOKUR::SMC or call DTN: 234-4423.

CONTENTS

1 INTRODUCTION 1
1.1 PURPOSE 1
1.2 SCOPE 1
1.3 RESPONSIBILITIES 1
1.3.1 Site Producibility 1
1.3.2 Engineering Services Site Document Control 1
1.3.3 Central Services Liaison (CSL) 1
1.3.4 Responsible Product Engineers - Design Sites 1
1.3.5 Manufacturing Plant 2

2 GENERAL RELEASE PROCESS INFORMATION 2
2.1 ETCH BOARD (50-CLASS) RELEASE 2
2.2 MODULE (54-CLASS) AND BACKPLANE (70-CLASS) RELEASE 2
2.3 PARALLEL 50/54-CLASS AND 50/70-CLASS RELEASE 3

3 MANUFACTURING PRODUCTION RELEASE PROCESS DESCRIPTIONS 3
3.1 RELEASE PACKAGE 4
3.2 VERIFY PACKAGE 4
3.3 RELEASE PACKAGE TO MANUFACTURING DATA SITE 4
3.4 CREATE OR COMPLETE THE DATA 4
3.5 PROCESS PRODUCT DATA 5
3.6 MODIFY DATA 5
3.7 RELEASE DOCUMENTS TO ARCHIVE 5
3.7.1 Sign Off 54-/70-Class Documents 5
3.7.2 Design Site Control 5
3.7.3 Micrographics Services 5

4 ECO RELEASE PROCESS REQUIREMENTS 6

5 RELEASE PACKAGE CONTENT REQUIREMENTS 6
5.1 DRAWING DIRECTORY (DD) 8
5.2 MECHANICAL DETAIL (MD) FOR DRILL AND ETCH 9
5.3 UNIT ASSEMBLY (UA) 9
5.3.1 50-Class Release 9
5.3.2 54-Class Release 9
5.3.3 70-Class Release 9
5.3.4 Parallel (50/54-Class) Release 9
5.4 PARTS LIST (KPL) 10
5.5 RELEASE PACKAGE VERIFICATION REQUEST FORM 10
5.6 TDF (TECHNICAL DATA FORM) 10
5.7 1:1 COMPOSITE DRAWING 11
5.8 REVISION MATRIX (RM) 11

6 RELEASE DOCUMENT DISTRIBUTION 11

Appendix A REFERENCED DOCUMENTS 15

A.1 EL-Class Digital Documents 15

FIGURES

1 Manufacturing Production Release Process Flow 3
2 Sample Release Package Verification Request Form - Electronic 12
3 Release Package Verification Request Form - Hard Copy 13
4 Technical Data Form 14

TABLES

1 Package Content Requirements for 50-Class Release Production Process 6
2 Package Content Requirements for 54-Class or 70-Class Release Production Process 7
3 Package Content Requirements for 50-/54-Class or 50/70-Class Release Production Process 8

1 INTRODUCTION

This section of DEC STD 140 defines the key aspects of the process to be used by engineering to release printed-wiring boards, modules, and backplanes to volume production.

1.1 PURPOSE

The purpose of this standard is to ensure the timely flow of accurate printed-wiring board, module, and backplane data from design to production.

1.2 SCOPE

This standard describes the printed-wiring board (50-class), module (54-class), backplane (70-class), and parallel (50/54-class and 50/70-class) release processes for printed-wiring boards, modules, and backplanes to meet manufacturing requirements. Documentation requirements and acceptance criteria are also listed.

This standard also establishes the specific items required to manufacture printed-wiring boards, modules, and backplanes to be part of the release verification packages that are initiated by engineering and sent to manufacturing for acceptance.

This standard provides a Release Package Verification Request, which is a form initiated by the design sites that lists printed circuit boards process criteria and package content requirements for the 50-class, 54-class, and parallel 50/54-class release process.

1.3 RESPONSIBILITIES

1.3.1 Site Producibility

Site Producibility is responsible for verifying that the module documentation is acceptable to manufacturing to build printed-wiring boards. Site Producibility shall sign off the 50-level MD in the manufacturing engineering block.

1.3.2 Engineering Services Site Document Control

Each Engineering Services Site Document Control organization is responsible for assigning document identifiers per *DEC STD 012-1 Unified Numbering Code - Mnemonic Drawing Codes*, Maintaining document control files (DCF), receiving new and revised engineering documentation (hard/soft copy drawings and master data bases), and supplying document information.

1.3.3 Central Services Liaison (CSL)

Central Services Liaison is responsible for transporting release packages between sites and the centrally-located functional organizations, if required.

1.3.4 Responsible Product Engineers - Design Sites

Responsible product engineers, as defined by the Chief Engineer's Option/Module List, are ultimately responsible for the design of printed-wiring boards and modules. The design site is responsible for the integrity of the data it releases which describes that design.

1.3.5 Manufacturing Plant

The product manager or a designated representative at the new product start-up plant shall sign off the 54/70-class documentation in the manufacturing engineering block.

2 GENERAL RELEASE PROCESS INFORMATION

The release of a printed-wiring board or module assembly can be initiated in two separate steps or in a single step. For example, an engineer may elect to initiate release of the etch board first (50-class release), and then the release of the related module (54-class release) at a later date. As an alternative, the engineer has the option to initiate release of the 50-class etch board and the related 54-class module simultaneously (50/54-class release). Once either step of the process has been completed, the information released at that step is under ECO control. Successful 50-class artwork verification and data generation is a prerequisite for 54-class release verification by manufacturing.

Release verification is accomplished when all steps of the process described in this standard have been successfully completed. The steps include:

a. Documentation sign off

b. Data generation

The original documentation is *released* to the site's document control for micrographic services to create and distribute microfilm. Site Document Control will store data bases and send a copy of the data bases to archive administration.

This release process includes taking required design data from engineering and transporting the necessary information to manufacturing for either new releases or designs that are undergoing ECOs.

2.1 ETCH BOARD (50-CLASS) RELEASE

The etch board release process is used to provide etch board design data from an engineering site to manufacturing. Manufacturing modifies the data that is required to produce the printed-wiring boards. Once the manufacturing plant has verified the data, notification of acceptance is sent to the design site. Upon notification of acceptance, the engineering data is released to the site design library. Figure 1 includes the flow of the 50-class release process.

2.2 MODULE (54-CLASS) AND BACKPLANE (70-CLASS) RELEASE

The 54-class module and 70-class backplane release processes are used to provide a completed design data package from an Engineering Services site to manufacturing. The manufacturing plant verifies the documentation and verifies the data that is required to produce modules. Once the manufacturing plant has verified the data, notification of acceptance is sent to the design site. Upon notification of acceptance, the 54-class documentation is signed-off by engineering and manufacturing, and the engineering data is placed in the site design library. Figure 1 includes the flow of the 54-class release process.

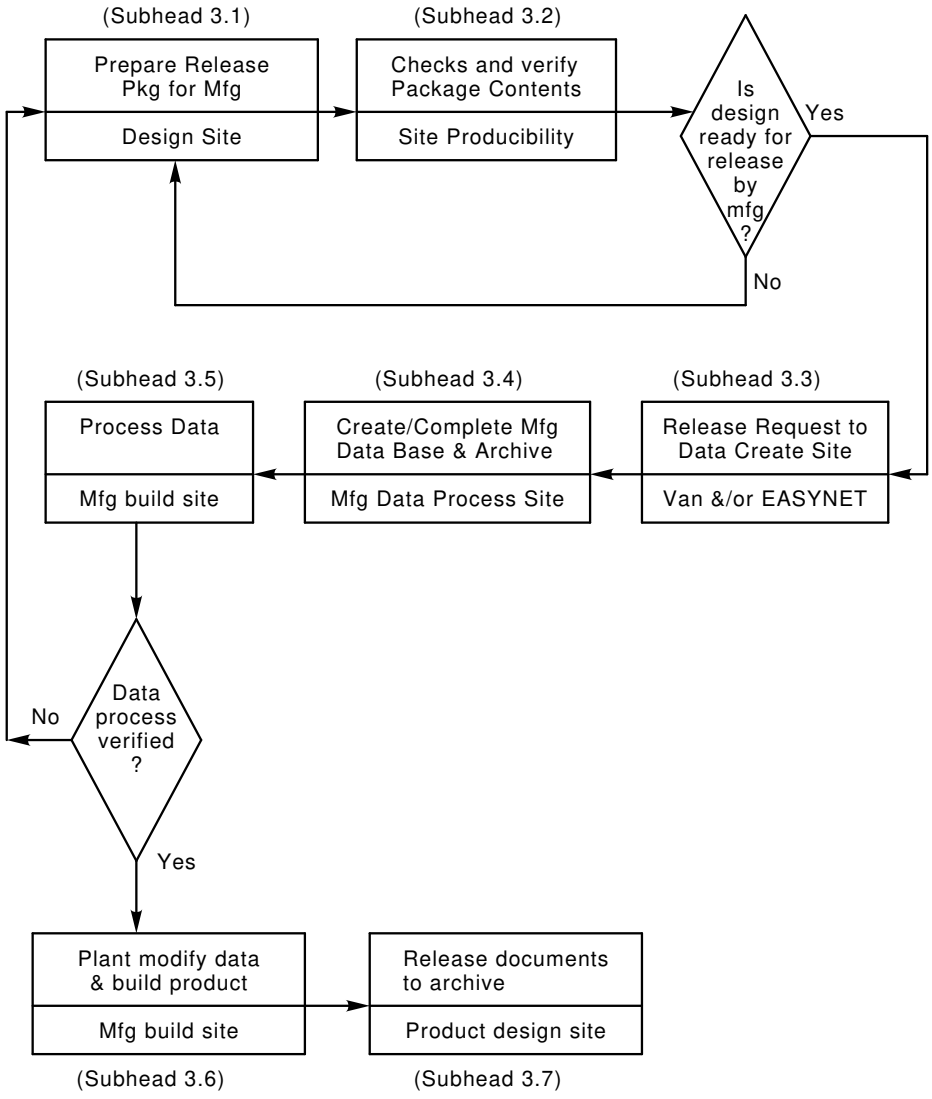
2.3 PARALLEL 50/54-CLASS AND 50/70-CLASS RELEASE

The parallel 50/54-class and 50/70-class release process flow is shown in Figure 1. For the most part, this process is a combination of the 50-class and 54-class release processes, described in subheads 2.1 and 2.2. The major advantage of the parallel 50/54-class release process is that the documentation verification and tool generation are done for both the etch board and module levels simultaneously.

3 MANUFACTURING PRODUCTION RELEASE PROCESS DESCRIPTIONS

The manufacturing production release process is shown in Figure 1. The subheads under this header supplement the flowchart annotation shown in Figure 1.

Figure 1: Manufacturing Production Release Process Flow



3.1 RELEASE PACKAGE

The design site prepares a transfer package of data and information required for release. Site Producibility will review the package for acceptability. 50-Class sign off/approval occurs at this time.

3.2 VERIFY PACKAGE

For a 50-class release, Site Producibility shall do the following:

a. Verify that the documentation contents are complete

b. Verify that revisions are correct agree with those on the DD and that the documentation has been signed/approved

c. Verify that all problems on the feedback sheet have been corrected or waived and are documented in the release package

d. Verify that there have been no changes made since the last pass prototype

For 54/70-class release, Site Producibility shall do the following:

a. Verify that the documentation contents are complete

b. Verify that revisions agree with those on the DD

c. Verify that all problems on the feedback sheet have been corrected or waived and are documented in the release package

d. Verify that there have been no changes made since the last pass prototype

3.3 RELEASE PACKAGE TO MANUFACTURING DATA SITE

Once the release has been verified, the transfer package must be forwarded to the location where the manufacturing data can be initially created. The type of transfer media and actual process used will determine how the data is transferred. Sites using traditional processes will use a shuttle van while sites using one of the "paperless" processes can deliver entirely over the ENET.

3.4 CREATE OR COMPLETE THE DATA

Once the transfer package is sent to the data creation site, an assembly- or board-level data will be either created or completed. The actual design process will determine the location and procedures of this activity.

For those sites using an automated paperless process, the transfer package will include preliminary data. This data is completed by adding assembly board-level information.

Traditional processes that use PDFs as interface files will be delivered to different sites. Transfer packages for etch boards are typically delivered to the release site. 54-class prototype transfer packages are typically delivered to the assembly group-level manufacturing tool generation site.

Regardless of the process used, the end result is the same: that is, manufacturing product representatives will take engineering circuit-level information, add manufacturing assembly level data, and output completed product data, which is then provided to the appropriate manufacturing site.

Once the manufacturing data is created, it is stored at the product release site for future use. Design sites using paperless processes may use the ENET to transfer the completed data to the manufacturing site.

3.5 PROCESS PRODUCT DATA

Since the manufacturing data contains limited process information and is primarily a description of the physical product, it may be processed before manufacturing tools can be created. Manufacturing processes and process parameters vary from location to location and are also constantly changing to take advantage of newly developed technologies. For this reason, each manufacturing processing site is responsible for integrating their specific process needs with the data for creating their manufacturing tools.

If data processing cannot be completed, the data package shall be returned to the design site.

3.6 MODIFY DATA

Once the manufacturing data has been processed, production data such as artwork, drill tapes, and insertion tapes may be created. Upon successful completion of production data, the manufacturing plant shall notify the design site to release the product documentation using the Release Package Verification Request Form shown in subhead 6, Figure 2, or via an ENET mail message. At this time, volume production of the product may begin.

For surface mount designs, artwork for the solderpaste stencil shall be plotted with the rest of the artwork package and delivered to the appropriate assembly plant(s).

3.7 RELEASE DOCUMENTS TO ARCHIVE

3.7.1 Sign Off 54-/70-Class Documents

Once the product engineer has approved the design for release and the Release Acceptance Notification has been received, the design site coordinator will have the responsible product engineer and a manufacturing site representative sign off the drawings. The 54-/70-class release design data will be sent to Design Site Control by the design site coordinator.

3.7.2 Design Site Control

Design Site Control will store the master data bases and send a copy of the data to Micrographics Services Archive Administration. Design Site Control also notifies the manufacturing sites that the data is available.

3.7.3 Micrographics Services

The microfilm creation and distribution procedure is described in *DEC STD 033-0 Microfilm Aperture Cards - Creation and Distribution Process*.

4 ECO RELEASE PROCESS REQUIREMENTS

The ECO release process follows the path described in subheads 3.1 through 3.7.

The release package requirements for an etch board and/or module ECO are the same as those described in subheads 5.1 through 5.11, with the addition of an ECO Face Sheet. The preparation of the ECO Face Sheet is described in *DEC STD 100-0 Engineering Change Orders*.

5 RELEASE PACKAGE CONTENT REQUIREMENTS

Tables 1, 2, and 3 summarize the content requirements for 50-class, 54-class, 70-class, and parallel 50/54-class and 50/70-class release packages.

Table 1: Package Content Requirements for 50-Class Release Production Process

ITEM NAME	ETCH BOARD PACKAGE (50-CLASS ONLY)	DETAILED INFORMATION REFERENCE
NETWORKED OR MAGNETIC MEDIA		
Circuit-level data[1]	1 complete set of network data	To be determined
ENGINEERING DRAWINGS/NETWORK DATA FILE		
Drawing Directory (DD)	1 copy	Subhead 5.1
Mechanical Detail (MD) - for drill and etch	3 complete sets per board shop/1 data file	Subhead 5.2
MISCELLANEOUS DOCUMENTATION/DATA FILE		
Package Verification Request Form	1 copy	Subhead 5.5
Technical data file	1 copy (if required)	Subhead 5.6
ECO face sheet	1 copy (ECO release only)	Subhead 4

NOTE

Acceptance criteria, purpose, and use of each required item are described in detail in *DEC STD 140-4 Data Requirements for Printed-Wiring Boards, Modules, and Backplanes* (in process) and under subhead 5 in this document.

[1] Component-level information is not required.

Table 2: Package Content Requirements for 54-Class or 70-Class Release Production Process

ITEM NAME	ASSEMBLY PACKAGE (54/70 CLASS ONLY)	DETAILED INFORMATION REFERENCE
	NETWORKED OR MAGNETIC MEDIA	
Module/backplane data	1 complete set/networked media	To be determined
	ENGINEERING DRAWINGS/NETWORK DATA FILE	
Drawing Directory (DD)	1 copy	Subhead 5.1
Unit Assembly (UA)	3 complete sets/1 data file	Subhead 5.3
Parts List (KPL)	1 complete KPL/1 data file	Subhead 5.4
AD or IA	1 copy (70-class only)	DEC STD 140-3, Subhead 3.1.2.1
	MISCELLANEOUS DOCUMENTATION/DATA FILES	
Package Verification Request Form	1 copy	Subhead 5.5
Technical data file	1 copy (if required)	Subhead 5.6
ECO face sheet	1 copy (ECO release only)	Subhead 4
Revision Matrix (RM)	1 copy (if applicable)	Subhead 5.8 and DEC STD 068
	ADDITIONAL REQUIREMENTS	
1:1 composite drawing (UA without holes shown)	1 copy	Subhead 5.7

NOTE

Acceptance criteria, purpose, and use of each required item are described in detail in *DEC STD 140-4 Data Requirements for Printed-Wiring Boards, Modules, and Backplanes* (in process) and under subhead 5 in this document.

Table 3: Package Content Requirements for 50-/54-Class or 50/70-Class Release Production Process

ITEM NAME	ETCH BOARD AND ASSEMBLY	DETAILED INFORMATION REFERENCE
	NETWORKED OR MAGNETIC MEDIA	
Circuit and module/backplane data	1 complete set of media/networked data file	To be determined
	ENGINEERING DRAWINGS/NETWORK DATA FILE	
Drawing Directories (DD)	1 copy each 50-,54-, and 70-class	Subhead 5.1
Mechanical Detail (MD) for drill and etch	3 complete sets per board shop/data file	Subhead 5.2
Unit Assembly (UA)	3 complete sets/data file plus 1 component location drawing per board shop	Subhead 5.3
Parts List (KPL)	1 complete KPL/data file	Subhead 5.4
AD or IA	1 copy (70-class only)	DEC STD 140-3, Subhead 3.1.2.1
	MISCELLANEOUS DOCUMENTATION/DATA FILES	
Package Verification Request Sheet	1 Copy	Subhead 5.5
Technical Data File	1 Copy (if required)	Subhead 5.6
ECO Face Sheet	1 Copy (ECO release only)	Subhead 4
Revision Matrix (RM)	1 Copy (if applicable)	Subhead 5.8 and DEC STD 068
	ADDITIONAL REQUIREMENTS/DATA FILES	
1:1 Composite Drawing	1 Copy	Subhead 5.7

NOTE

Acceptance criteria, purpose, and use of each required item are described in detail in *DEC STD 140-4 Data Requirements for Printed-Wiring Boards, Modules, and Backplanes* (in process) and under subhead 5 in this document.

5.1 DRAWING DIRECTORY (DD)

a. One copy of the drawing directory (50-, 54-, 70-, or 50-/54-class), that specifies all applicable documentation and revisions is required.

b. The drawing directory must comply with the requirements of *DEC STD 024-1 Drawing Directory Requirements - DRB 126A Format*, *DEC STD 140-1 Documentation Requirements for Printed-Wiring Boards (50-Class)*, *DEC STD 140-2 Documentation Requirements for 54-Class Modules and Backplanes*, and *DEC STD 140-3 Documentation Requirements for Backplanes (50/54- and 70-Class)*.

5.2 MECHANICAL DETAIL (MD) FOR DRILL AND ETCH

The Mechanical Detail (MD) drill and etch drawings are required for 50-class and parallel 50/54/70-class release.

Etch Board (50-Class) Release and 50/54-Release Requirements

a. Three complete MD drawings or on-line data files are required for each specified board shop.

b. All approval blocks and board fabrication information blocks must be completed. The production block or "manufacturing" block must be signed by a representative of Producibility.

c. The MD drawings must comply with the requirements of DEC STD 140-1.

5.3 UNIT ASSEMBLY (UA)

5.3.1 50-Class Release

a. One copy of the component location drawing or on-line data file, (usually sheet 1 of the UA) is required for each specified board shop.

b. The "MFG. ENG." approval block on the UA does not have to be completed at the time of 50-class release; it can be done after verification at 54-class release.

Sheet 1 of the UA is used by the board shops for reference and as an aid in determining disposition of those circuit boards that do not meet specific manufacturing requirements.

5.3.2 54-Class Release

a. One complete UA print set or on-line data is required.

b. All sheets properly completed with part numbers and revisions.

c. The "MFG. ENG." approval block shall be completed after verification.

d. The UA print or data file must conform to all applicable Digital standards and specifications, such as DEC STD 140-2.

5.3.3 70-Class Release

a. One complete AD/IA print set or on-line data is required and must conform to all applicable Digital standards and specifications, such as DEC STD 140-3.

b. All sheets properly completed with part numbers and revisions.

c. The "MFG. ENG." approval block shall be completed after verification.

5.3.4 Parallel (50/54-Class) Release

The combined requirements of subheads 5.3.1 and 5.3.2 apply.

5.4 PARTS LIST (KPL)

54-Class Release and 50-/54-/70-Class Release

a. One hard copy parts list or data file, containing complete part information for all variations of the module being released, is required.

b. The parts list must comply with the requirements of *DEC STD 025-0 Parts Lists*. For example, no reference designator shall be listed for more than one part number (per variation) and no part number shall be listed more than once (per variation).

c. The "MFG. ENG." block shall be completed after verification.

d. The parts list should contain miscellaneous packaging requirements necessary on a per module basis.

5.5 RELEASE PACKAGE VERIFICATION REQUEST FORM

The Release Package Verification Request Form is required for any type of release. The acceptance criteria, purpose and use are the same for each type of release.

a. A Release Package Verification Request Form, with current information filled in, is required.

b. All appropriate release package requirements specified by the Release Package Verification Request sheet must be accounted for and quantities indicated.

c. The sheet must be completed and dated by an authorized person, such as the site design/drafting release coordinator.

d. This sheet is required at all levels of release to initiate the Release Package Verification Process. Sample forms are shown in Figures 2 and 3. The sheet serves the following three purposes:

- Provides product and package information (in place of the release package content sheet) to manufacturing.
- Provides written confirmation to the design site as to the accept/reject disposition of the release package and successful tool generation.
- In the specific case of a rejection, it provides the design site and Producibility with a written problem description and serves as a feedback mechanism for reporting corrective action taken.

A Release Package Verification Request sheet is initiated by the design site each time a release package is submitted to Site Producibility for approval. It will be completed by the manufacturing site and returned to the design site upon successful generation of manufacturing tools. This authorizes the release of the data package to microfilm.

5.6 TDF (TECHNICAL DATA FORM)

A TDF is only required if the design site does not supply an MDB. Producibility supplies manufacturing information to the STREAM site for addition of board-level features to circuit data. See Figure 3.

5.7 1:1 COMPOSITE DRAWING

54- and 50/54-Class Release

The composite drawing consists of circuit and component outlines. A 1:1 machine-generated composite drawing or a data file is acceptable, subject to the criteria listed below:

a. If the data file is not accessible, the composite drawing must be drawn to full scale (1:1).

b. If the data file is not accessible, the drawing must be provided on a reproducible medium such as vellum, Mylar, or film, and must not be folded. Although this drawing may not be a released engineering drawing, it must meet the requirements of *DEC STD 182-0 Engineering Documentation Acceptance Criteria*.

NOTE

If the composite drawing cannot be completely produced by machine, as described, it is acceptable (and required) to add component outlines and other details manually.

For 54-class and parallel 50/54 release, the 1:1 composite drawing is used by manufacturing to produce the transparent component overlays used by module assembly as an assembly and a process aid. The 1:1 composite is also used to provide negative overlays necessary for verification of templates that are used in module assembly.

5.8 REVISION MATRIX (RM)

A revision matrix document specifies revision interdependencies among parts and is required only when requested by engineering. Refer to *DEC STD 068-0 Policy for Documentation of Revision Levels of Units and Combinations of Units* for detailed information.

6 RELEASE DOCUMENT DISTRIBUTION

During the release distribution cycle the microfilming of drawings and distribution of aperture cards takes place and the original data is sent to the site library for storage and archiving. After Micrographics Services (or an approved vendor) accepts the drawings, it will transfer the original drawings received during etch and module release cycles to the site library, the duplicards to the plant sites, and the signed Package Content Sheet to the site release coordinator, who will close out the work order, stop Unit Charge, and notify the engineer that his job is complete.

Refer to DEC STD 033-0 for release distribution details.

Figure 2: Sample Release Package Verification Request Form - Electronic

```
DIGITAL EQUIPMENT CORP        RELEASE PACKAGE        FORM: EN-01201-16 NAC1
                         VERIFICATION REQUEST FORM    S/W: RELVEREDT Vr. 1.0
PC Design Site:             (For Boards/Modules)      DATE:  DD-MMMMMMMMM-YY
Module and Rev:       Board and Rev:          ** FOR NEW RELEASE, ONLY
                                                 Release Type: (50,50/54,54)
================================================================================
                  General Information Section
--------------------------------------------------------------------------------
  Responsible Parties:          Badge   DTN     ENET Address
Engineer     :
Rel Coord    :
Mfg Rep      :
Producib Tech:
Mfg Sites: Primary  Secondary |   Info on last board prototype:
 Board Shop                   |       Board Shop site:
 Module Assy                  |       Last Proto Part and Rev:
================================================================================
                   PCB Information Section
--------------------------------------------------------------------------------
Board Size:(Std,BI,Hex,Etc)       Density:(Use Codes)
Board Type:(layers)               Layout System: (VLS, Applicon, IDEA, etc)
Fingers:(None or Type)            Circuit Dimensions: (Inches)
Holes on DEC STD 30 Grid:Yes/No
================================================================================
                  Module Information Section
--------------------------------------------------------------------------------
Insertion Tools (will/will not) be generated:  Waiver was requested by:
Reason for Waiver:
================================================================================
              Release Package Contents
--------------------------------------------------------------------------------
  Item in Package:       When Used:  Copies, Media, or Method of Delivery
Engineering Drawings:
-Drawing Directory      50, 54/70, 50/54
-MD-Print Sets          50, 50/54/70
-UA-Print Sets          54, 50/54/70
(Optional item 1)
(Optional item 2)
(Optional item 3)
Data Files              50, 50/54/70
PDQ Form                50, 50/54/70
PDF                     50, 50/54/70  -NONE-
SPL                     54, 50/54/70  -NONE-
MIFs                    50, 50/54/70  -NONE-
MIF Post Process Sheet  50, 50/54/70  -NONE-
MVP Print Out                         -NONE-
Composite 1:1 Drawing   50, 50/54/70  -NONE-
================================================================================
                Comments (Release Coordinator)
```

Figure 3: Release Package Verification Request Form - Hard Copy

digital **RELEASE PACKAGE VERIFICATION REQUEST** —BOARDS/MODULES

INSTRUCTIONS: MODULE #/REV., BOARD #/REV., AND SECTIONS 1, 2 & 4 MUST BE COMPLETED FOR ALL LEVELS OF RELEASE. SECTION 3 IS MANDATORY FOR 54 LEVEL RELEASES. ORIGINATOR RETAINS PINK COPY. REMAINING SHEETS TO BE INCLUDED WITH THE RELEASE PACKAGE BEING SUBMITTED. SECTION 5 TO BE COMPLETED BY TSS/PTS.	MODULE NUMBER	REV
	BOARD NUMBER	REV

SECTION 1: GENERAL

RESPONSIBLE ENGINEER	DTN	MAIL STOP/ ENET	DISCRETE CHARGE NO.	REQUEST: ☐ NEW REL ☐ ECO LEVEL: ☐ 50 ☐ 54 ☐ 50/54 ☐ 70 ☐ 50/70
RELEASE COORDINATOR	DTN	MAIL STOP/ ENET	WORK ORDER NO.	BOARD MFG. SITE(S): PRIM:_____ SEC:_____
MFG. REPRESENTATIVE	DTN	MAIL STOP/ ENET	DATE OF REQUEST	MODULE ASSEMBLY SITE(S): PRIM:_____ SEC:_____

SECTION 2: PCB

ASSY BRD SIZE: ELMF _____ ASSY BRD TYPE: ☐DS ☐ML ☐MSL ___(LYRS)	TECH. DEF. ☐ SD (.020/.020) ☐ HD1 (.015/.015) ☐ HD2 (.012/.013) ☐ FL1 (.008/.008) ☐ FL2 (.006/.010) ☐ FL3 (.006/.010) BI ☐ FL4 (.005/.005)	CKT DIMENSIONS (INCHES) WIDTH _____ HEIGHT _____ X THICKNESS _____
GOLD ☐YES ☐NO		COMPONENT HOLES ON .100 GRID ☐
	CAD SYS _____	COMPONENT HOLES ON .050 GRID ☐

SECTION 3: MODULE

☐ REQUEST INSERTION TOOLS BE WAIVED. REQUEST BY: _____ LOC.: _____
REASON:

SECTION 4: RELEASE PACKAGE CONTENTS

NOTE: ENTER QUANTITIES INCLUDED IN RELEASE PKG IN BOXES BELOW. REF. DEC STD 140 FOR EXACT QTY REQUIREMENTS. NR = NO REQ. * = ECO REQ. ONLY

ITEMS REQUIRED ▼ / LVL OF REL ▶	50	54	50/54
		70	50/70
MAGNETIC MEDIA: INDICATE NO. OF DECTAPES			
PDF OR CIRCUIT MDB			
MISC. DOCUMENTATION: INDICATE NO. OF COPIES			
TDF (REQUIRED WITH PDF)			
COMPOSITE 1:1 DRAWING	NR		
ECO COVER SHEET			
ENGINEERING DRAWINGS: INDICATE NO. PRINT SETS			
DRAWING DIRECTORY			
MD-PRINT SETS		NR	
UA-SHEET ONE ONLY		NR	
UA-PRINT SETS	NR		
KPL-PRINT OUT	NR		

COMMENTS

_____
_____
_____
_____
_____
_____

SECTION 5: ACCEPT/REJECT STATUS

THE RELEASE PACKAGE SUBMITTED FOR THE ABOVE PRODUCT HAS BEEN:

☐ VERIFIED AND ACCEPTED BY SITE PRODUCIBILITY ENGINEERING RELEASE AT:
☐ 50 LEVEL ☐ 54 LEVEL ☐ 70 LEVEL
☐ 50/54 LEVEL ☐ 50/70 LEVEL

BY: _____ DATE: ___/___/___

DTN: _____ LOC.: _____

Figure 4: Technical Data Form

```
   CAMPA  Rev# 1.00     04-Sep-86
================================================================================
     TDF (Part I) - PDQ#        Rev    Date

================================================================================
 Technician: X                      Date: 09/04/86
Up Front check:    Pre-release check:    50-Release:   54-Release:
       *Status:             Board ID:                  *Mod REV:
                            Etch REV:                 Module ID:
   Board Width:          Board Height:                Module ID:
                     Fin. Circuit Size:                Module ID:
 Step & Repeat:          Line Density:                Module ID:
        Layers:    Tech Defn Density:                Module ID:
       Fingers:      Soldermask Side:
   *Layout Sys:    Feedthrus Covered:
   *Ins_Waiver:               Waiver:
Cont. Impedance:    Std Autothieving:
*Testhead tools:  Surface Mount Side:
* Not required at Prototype
--------------------------------------------------------------------------------
ENGINEERING SPECIAL FEATURES/INFORMATION:
(L  ):
(L  ):
(DRL):
(CIW):
(LDN):
--------------------------------------------------------------------------------
```

APPENDIX A REFERENCED DOCUMENTS

A.1 EL-Class Digital Documents

EL-Class Number	Document Title
EL-00012-01	*DEC STD 012-1 Documentattion Identification Conventions Including Mnemonic Codes*
EL-00024-01	*DEC STD 024-1 Top Document Requirements - DRB 126C Format*
EL-00025-00	*DEC STD 025-0 Parts Lists*
EL-00030-00	*DEC STD 030-0 Module Manufacturing Standard - Introduction and General Information*
EL-00033-00	*DEC STD 033-0 Microfilm Aperture Cards - Creation and Distribution Process*
EL-00068-00	*DEC STD 068-0 Policy for Documentation of Revision Levels of Units and Combinations of Units*
EL-00100-00	*DEC STD 100-0 Policy and Requirements for the Product Change Process*
EL-00140-00	*DEC STD 140-0 Documentation, Data, and Release Requirements for Printed-Wiring Boards, Modules, and Backplanes - Introduction*
EL-00140-01	*DEC STD 140-1 Documentation Requirements for Printed-Wiring Boards (50-Class)*
EL-00140-02	*DEC STD 140-2 Documentation Requirements for 54-Class Modules and Backplanes*
EL-00140-03	*DEC STD 140-3 Documentation Requirements for Backplanes (50, 54, and 70-Class)*
EL-00140-04	*DEC STD 140-4 Etch Board and Module Release Verification Requirements and Procedures - Data Requirements*
EL-00182-00	*DEC STD 182-0 Engineering Documentation Acceptance Criteria*

Use VTX SMC to order copies of EL-class documents from Standards and Methods Control. Send distribution questions to JOKUR::SMC or call DTN: 234-4423.

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